



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

### ***GUIDELINES FOR CARE AND MAINTENANCE OF CAPTIVE SEA TURTLES***

September 24, 2012

The U.S. Fish and Wildlife Service (Service) has developed the following minimum requirements for all species of sea turtles held in captivity in the United States. Their primary purpose is to provide standard facility requirements. They also include some guidance on transport and rehabilitation of sea turtles.

***These requirements must be met as a condition of any Service endangered or threatened species permit or disposition instructions authorizing any activity otherwise prohibited by the U.S. Endangered Species Act or the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). States may have additional requirements with these requirements being the minimum standard.***

The individual/institution to whom a Service permit or instructions for disposition have been issued must notify the appropriate Service Field Office or Regional Office (<http://www.fws.gov/endangered/regions/index.html>) that issued the permit or letter of authorization in writing of any inability to meet or maintain these requirements within 60 days of transmittal of these requirements. This notification must include a description of all shortcomings and emergency provisions, back-up systems, and filtration if not previously submitted. ***Failure to do so must be considered a violation of the Service permit or letter of authorization.***

Note: States with a sea turtle program that is comprised of dedicated staff with sea turtle expertise may issue permits for captive maintenance of sea turtles under the auspices of their Endangered Species Act section 6 agreements with the Service. However, there are some situations where a Service permit or letter of authorization is required in addition to a State permit. These situations include: (1) captive research on endangered turtles that may result in death or permanent disabling of a turtle, (2) euthanasia of endangered turtles, (3) transport of live endangered turtles across State lines unless such transport is necessary to aid a sick or injured turtle, and (4) holding of endangered turtles in captivity for a period of more than 45 consecutive days unless such holding is necessary to aid a sick or injured turtle.

Non-releasable turtles are defined as turtles (bycaught, stranded, or congenitally deformed) that have been rehabilitated, but which have permanent handicapping injuries or defects that preclude their potential survival in the wild. Many injuries, when healed, will not hamper a turtle's existence in the wild. For example, the loss of a flipper does not prevent a turtle from being able to survive in the wild. Flipper damage is not an unusual occurrence and is often documented in nesting turtles on the beach. Examples of conditions that result in declaration of non-releasable status include blindness in both eyes, loss of more than 75% of three or four flippers, or abnormal buoyancy that prevents normal foraging behavior.

## **TYPES OF CAPTIVE MAINTENANCE**

### Educational Display of Turtles

Depending upon the display capabilities of a facility and proper justification (specific benefit to the conservation of the species in the wild), threatened loggerhead turtles (*Caretta caretta*) and/or threatened green turtles (*Chelonia mydas*) may be displayed for educational purposes by a facility that is primarily educational in nature. Education facilities include those open to the general public at least five days a week and receive no less than an average of 100 visitors per week. Feeding, touching, and/or handling of turtles by the public is not permitted.

Turtles must be on display (unless otherwise restricted by provisions or exempted in the “Hatchling Plan” described below) and the display must be accompanied by interpretive signage or other interactive methods of communications such as live lectures, displays, and self-guided audio tours. These displays should include the following: species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., incidental capture in fisheries, boat strikes, ingestion of debris, ocean dumping, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beachfront lighting, etc.).

For any rehabilitating turtle proposed for public display, the veterinarian responsible for the care of the animal must deem that the turtle is stable and the additional stress associated with public display will not affect the turtle’s health. The release of the turtle must not be delayed or expedited to facilitate the public display.

If threatened loggerheads or threatened green turtles, proposed for public display, are obtained as hatchlings, the facility must obtain a Service and/or State permit. A “Hatchling Plan” must be submitted with the permit application submissions, which includes the following information:

1. A description of the collection method. It is recommended that only those hatchlings that would not have made it out of the nest (i.e., “the stragglers”) be collected. These hatchlings are usually found when the nest is excavated 3 days after an emergence is observed in order to assess hatching success. Manipulating nests and/or hatchlings to obtain hatchlings for public display is not allowed as it interferes with the “frenzy” period. This period is critical for hatchlings to move from their nest to the surf and through the surf zone and continue swimming away from land for approximately 20 to 30 hours (Carr 1982, Wyneken and Salmon 1992, Witherington 1995).
2. A justification that identifies the benefit of taking hatchlings from the wild for public display to the conservation of the species in the wild, including specific Recovery Actions identified in the species’ Recovery Plan. The permit application should include a justification for the minimum number of hatchlings needed to achieve the specific Recovery Actions.
3. Information on the quantity and type of food that will be fed to the hatchling(s) for the entire time the hatchling(s) will be kept in captivity. The diet must be reviewed and approved by the facility veterinarian.

4. Information on the tank(s) and location at the facility where the hatchling(s) will be housed for the entire duration.
5. A written plan for the release of the hatchlings that is coordinated with the Service and/or State agency. The timing and location of the release will be based on the best scientific information for that size class by State. Include information on the diet that will be given to the turtle(s) to ensure sufficient foraging capabilities upon release.
6. A commitment to provide periodic reports on the turtle(s). At a minimum, annual reporting (quarterly reporting may be required) on the current weight, maximum curved carapace length, and condition of each hatchling must be emailed to the Service and/or State as appropriate.

Note: This does not apply to hatchlings or post-hatchlings that are washed back and most often are released shortly thereafter.

It is the responsibility of the individual/institution to which a permit is issued or disposition instructions are provided to ensure that their facility has the necessary tank space to accommodate the sea turtle(s) until it is ready for release. Turtle(s) obtained as hatchlings should not need to be moved to another facility because of inadequate tank space.

Any facility holding sea turtles for educational display must also meet all requirements that follow under *Care and Maintenance Requirements*.

#### Educational Tours of Captive Turtles:

1. Tours must only be conducted during hours when the turtles would normally be exposed to light. The light exposure can be modified for seasonal photoperiods but must have consecutive hours of darkness as found in the natural environment during that period.
2. Educational topics must include species identification, protection status under the Endangered Species Act, general life history, and current conservation issues (e.g., incidental capture in fisheries, boat strikes, ingestion of debris, ocean dumping, loss of nesting beaches, loss of developmental habitats and adult foraging grounds, beachfront lighting, etc.).
3. Each tour should have at least one staff/volunteer present at the time of the tour for every 15 guests. More staff/volunteers may be needed as appropriate to ensure guests are not in contact with the tank or medical equipment.
4. Visitors must be given clear instructions to minimize disturbance and stress to turtles, including no touching of turtles or their tanks, minimal noise, and no flash photography.
5. Tanks must be half covered or have a hiding spot for turtles to decrease stress from tours.

6. The following information must be included in the annual report – number of tours; number of people, dates, and times of the tours; medical condition of each turtle involved in the tours; and the release date of the turtle(s).

#### Additional Requirements for Educational Tours of Rehabilitating Turtles:

Educational tours and the display of rehabilitating animals are not authorized for turtles in critical care. The veterinarian responsible for the care of a turtle must deem that the turtle is stable and that the tours will not affect the turtle's health. The release of the turtle must not be delayed to facilitate the tours. To conduct tours, facilities must meet the following conditions:

1. The timing of the tour must not interfere with the treatment and care of the turtle.
2. Tours may be conducted while a turtle is in treatment if the veterinarian responsible for the care of the turtle approves, and guests are kept at a far enough distance from the turtle and staff working with the turtle so as to minimize the potential for additional stress and not interfere with treatment.

#### Research

An investigator wanting to conduct scientific research on captive sea turtles must consider whether to obtain a Service and/or State permit. A permit may be required for holding a captive sea turtle for an extended period, or for activities and procedures that exceed normal animal husbandry practices.

The following information should be included with research permit application submissions:

1. A letter from the veterinarian who is or will be caring for the turtle(s) stating that the research activity will not compromise the health of the turtle and its' survival in the wild.
2. A proposal that identifies the benefit of the research to the conservation of the species in the wild, including specific Recovery Actions identified in the species' Recovery Plan.

Unless a specific exception is granted because of research conditions, anyone holding turtles for scientific research must follow all guidelines (including the requirements that follow below under *Care and Maintenance Requirements*) as required by a Service and/or State permit.

Note: The release of rehabilitated turtles must not be delayed to obtain permits or to facilitate a research project unless authorized in the Service and/or State permit.

#### Rehabilitation

Upon locating a sick or injured sea turtle, initial notification must be made immediately to the appropriate State Sea Turtle Stranding and Salvage Network Coordinator (<http://www.sefsc.noaa.gov/species/turtles/strandings.htm>). A facility receiving for treatment or

rehabilitation any sea turtle that is sick or injured must first obtain a Service and/or State permit or letter of authorization. Any facility holding sea turtles for rehabilitation must also meet all requirements that follow under *Care and Maintenance Requirements*. All facilities conducting rehabilitation must obtain a Service and/or State permit for euthanasia or have access to a veterinarian that has a Service and/or State permit for euthanasia. Note: Euthanasia of endangered turtles may only be authorized by the Service.

#### Transport:

Sea turtles are to be transported in a climate-controlled environment, protected from extremes of heat and cold, and kept moist. In general, the best range of temperatures for transport is between 21°C and 27°C (70°F and 80°F; see additional guidance for cold-stunned turtles below). If a turtle is transported at temperatures greater than or equal to 23.9°C (75°F), it should be cooled by keeping a wet towel on the carapace and by periodically applying water. Water and wet towels should not be used when transporting turtles at temperatures less than 23.9°C (75°F) or at any time they are exposed to an air-conditioned environment (exception: open wounds should be kept moist with clean freshwater regardless of temperature). At temperatures less than 23.9°C (75°F), juvenile turtles (less than 30 cm curved carapace length) may be kept from drying out during transport by applying a thin layer of a water-based, water soluble, non-petroleum lubricant (e.g., K-Y Jelly) to the carapace and all the soft tissues (except the eyes and any open wounds). Larger turtles ( $\geq 30$  cm curved carapace length) do not need a lubricant because they are less likely to dry out due to their low surface to volume ratio: use of a lubricant should be avoided to minimize handling injuries. If transport is longer than 45 minutes, ophthalmic gel may be used to maintain moisture in the turtle's eyes to avoid eye damage.

During transport, cold-stunned turtles should not be exposed to air temperatures above 11°C (52°F). During housing and/or subsequent treatment, cold-stunned turtles should be exposed to gradually rising air and water temperatures over many days, and not exposed to temperatures that would shock them thermally.

Turtles should be placed in closed containers with sufficient holes for adequate ventilation during transport. Turtles must not be transported in water. The containers housing turtles during transport are to be padded and may not contain any material that could be accidentally ingested. Hatchlings (sea turtles with a curved carapace length  $\leq 4$  cm) should be transported in a container with moist sand. Post-hatchlings (sea turtles with a curved carapace length  $> 4$  cm and  $\leq 6$  cm for all species except leatherbacks) should be transported in a container with a damp towel or cloth at the bottom of the container. The containers should be secured during transport so they do not slide around or tip over. The Service or State permit or letter of authorization must accompany turtles during transport.

## **CARE AND MAINTENANCE REQUIREMENTS**

### Facility Construction

#### Tank Size Requirements:

Holding tank sizes for turtles must be based upon the size of the largest specimen in the tank as described below. Use maximum curved carapace measurements to determine the appropriate tank size.

Note: For a long-term, non-releasable turtle(s), the facility must have a tank or tanks of sufficient size to accommodate the turtle(s) through all life stages. If a facility cannot hold the non-releasable turtle(s) as it grows, they must provide the following information to the Service: (a) A letter from another facility that has agreed to permanently hold the turtle(s) once it reaches a size that the facility can no longer accommodate, (b) A description of how the turtle(s) will be transported to the other facility, and (c) Tank size(s) of the facility where the turtle(s) will be transported and remain.

1. Hatchlings and post-hatchlings (up to 6 centimeters curved carapace length) – for one hatchling, a tank or sub-section of a tank with a surface area of at least five times the shell length by two times the shell width of the turtle plus a minimum water depth of 1 foot. The minimum tank width must be no less than two times the shell width. Hatchlings must be housed separately.
2. Turtles greater than 6 centimeters and up to 50 centimeters curved carapace length – for one turtle, a tank with a surface area of at least seven times the shell length by two times the shell width of the turtle plus a minimum water depth of 2½ feet. For each additional turtle, increase the original surface area by 50%. The minimum tank width must be no less than two times the shell(s) width (i.e., for multiple turtles, the sum of the shell widths should be multiplied by two to determine the minimum tank width).
3. Turtles greater than 50 centimeters and up to 65 centimeters curved carapace length – for one turtle, a tank with a surface area of at least seven times the shell length by two times the shell width of the turtle plus a minimum water depth of 3 feet. For each additional turtle, increase the original surface area by 50%. The minimum tank width must be no less than two times the shell(s) width (i.e., for multiple turtles, the sum of the shell widths should be multiplied by two to determine the minimum tank width).
4. Turtles with a curved carapace length greater than 65 centimeters – for one turtle, a tank with a surface area of at least nine times the shell length by two times the shell width of the turtle plus a minimum water depth of 4 feet. For each additional turtle, increase the original surface area by 100%. The minimum tank width must be no less than two times the shell(s) width (i.e., for multiple turtles, the sum of the shell widths should be multiplied by two to determine the minimum tank width).

Exceptions:

- a. Sick or injured turtles may be temporarily held in a smaller isolation tank to facilitate treatments. Any turtles held for this purpose must be protected from desiccation and moved to an appropriate tank as soon as health allows.
- b. If necessary, healthy turtles may be held in a tank with dimensions less than those required for no more than 1 week every 3 months. The tank must be large enough to allow complete submergence and unimpeded turning.
- c. If necessary, hatchlings or post-hatchlings being held short term (to allow time to arrange safe release to the wild) may be held in a tank with dimensions less than those required above. They must be separated if aggression is observed between the hatchlings.

Tank Condition Requirements:

1. The inside surfaces of any holding tank must be non-abrasive, free of burrs or projections that could cause harm to turtles, and free of toxic heavy metals and organics, such as lead or copper paints. Any tank with painted surfaces must be free of biological hazardous material and must not be actively chipping or flaking. The tank must also be free of anything small enough to allow turtles access to bite or swallow. Use of non-finished concrete tanks should be avoided.
2. A holding tank must not contain any non-food items that may be ingested by a turtle or any items that would obstruct a turtle's ability to surface either to breathe or to float.
3. A holding tank must not contain entangling materials. Rock ledges or other habitat-mimicking items in the tank are encouraged to allow turtles to rest. However, these items must be constructed or placed in a manner that ensures a turtle cannot become tightly wedged or trapped underwater. Sea turtles must demonstrate the ability to maneuver safely around all tank items. Enrichment objects especially for resident/non-releasable turtles should be used for the quality of life and prevention of conditioning/pacing behavior. A tank should be designed to ensure the turtle stays within the tank at all times unless removed by facility personnel.
4. A holding tank must use railings/barriers to prevent the public from reaching into the tanks. If it is determined that public presence causes unnecessary stress, turtles should not be accessible to the public.
5. The drains or intakes of a holding tank must be constructed or securely shielded to prevent accidental entrapment. Inflows and drains must be placed to ensure appropriate water turnover and flow rates throughout all areas of the tank.

6. To help prevent the water temperature from becoming too warm ( $> 30^{\circ}\text{C}/86^{\circ}\text{F}$ ), any outdoor holding tank must be at least 30% shaded. If water is recirculated, shading should be increased to at least 50% shaded.

### Lighting

1. All the tanks in which sea turtles are housed must have enough lighting (sunlight and/or artificial lighting) to allow for easy viewing of the animals in all areas of the tank.
2. If artificial lighting is used as a primary light source, regular veterinary evaluation should address any lighting and/or dietary supplement needs based on clinical assessment and best available medical/husbandry information. Good quality full spectrum bulbs (UVA/UVB) (wavelength of UVB -280 nm to 320 nm) are recommended to promote general health and avoid potential metabolic problems. If “diffusers” are used, care must be taken to ensure appropriate full spectrum exposure.
3. The photoperiod of captive sea turtles must be similar to a natural photoperiod and mimic the summer and winter season daylight hours. Tanks must not be artificially illuminated to provide a photoperiod of more than 14 hours per 24-hour period to represent the natural seasonal photoperiods.
4. Dark/shaded areas must be provided to allow turtles a choice. Artificial light must not be excessive so as to cause sensitivity.
5. Lights above the top of the tank must have shield guards to prevent accidental breakage.

### Water Quality

Good water quality is essential to the health of sea turtles in captivity. Facilities should have written procedures for monitoring and maintaining water quality in all enclosures. At a minimum the following specific parameters must be met:

1. The salinity must be maintained between 20 ppt and 35 ppt. If necessary, sea turtles may be maintained in more or less saline water for up to 24 hours per week. Ill sea turtles may be kept at salinities below 20 ppt or above 35 ppt as prescribed by a veterinarian.
2. Water pH must be maintained between 7.2 and 8.5.
3. Water temperature must be maintained between  $20^{\circ}\text{C}$  and  $30^{\circ}\text{C}$  ( $68^{\circ}\text{F}$  and  $86^{\circ}\text{F}$ ). High and low extremes may induce disease (particularly fungal), injury, or even death and should be avoided. However, rehabilitation of cold-stunned turtles may require that turtles be placed in waters below  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ ) to allow them to warm gradually.
4. Chlorine can be used to treat the water to reduce bacterial and algae growth, but levels must be kept below 1.0 part per million (ppm). Chlorine levels greater than 1.0 ppm may cause



irritation to turtle eyes. No other chemical may be used to treat water in a tank housing sea turtles if the chemical is not safely ingestible by turtles at the dilution that would be needed for effective treatment.

5. Coliform bacteria must not exceed 1,000 MPN (most probable number) per 100 ml of water. Steps must be taken to prevent the conditions in which coliform bacteria proliferate. Testing for coliforms is a simple, cheap, preventative/proactive measure; it is recommended testing be conducted monthly on all systems. The steps to prevent coliform proliferation include adequate filtration (removing suspended material and larger pieces of feces and leftover food) and the use of an appropriate sanitizing chemical such as chlorine, or a high turnover rate with fresh, uncontaminated seawater. The Service or the appropriate State agency reserves the right to request total coliform counts monthly or more frequently if conditions warrant it.
6. If ozone is used for water treatment, the oxidation-reduction potential should be monitored and maintained below 400 millivolts (mV) if possible to reduce the potential for irritation.
7. The water must be clear enough to allow easy viewing of sea turtles in any part of the tank to assess health and activity.
8. Facilities holding turtles for rehabilitation must have tanks that maintain water quality by filtration or flow through. Tanks that require complete or near complete water changes as the sole means of maintaining water quality, such that the water level is dropped to the point where the turtle is sitting on the tank floor (“dump and fill”), may only be used for rehabilitation on a “temporary” (defined as an event where the turtle is expected to be medically cleared and ready for release within a 45-day period) or on an “emergency” (defined as an acute mass stranding event or an equipment-related failure at the facility such as power outages) basis as these conditions are not acceptable for long-term rehabilitation due to the additional stress caused by frequent maintenance.

The ultimate goal for a rehabilitating turtle is a return to and survival in the wild. The additional husbandry needs for a rehabilitating turtle in a “dump and fill” tank may unnecessarily acclimate a turtle to captivity. Therefore, if a turtle held in a “dump and fill” tank is not medically cleared within 45 days; the facility must contact the Service or State agency on a case-by-case basis to determine the appropriate course of action for the turtle.

9. Facilities that use “dump and fill” tanks for rehabilitation on a “temporary” or “emergency” basis must:
  - a. Ensure there are available tanks nearby so that a turtle can be quickly moved to a clean tank while the dirty tank is dumped, cleaned, and filled. This prevents the turtle from being out of the water for very long and reduces handling;
  - b. Remove food that is uneaten. If food must be left unattended, it is recommended that the uneaten food be removed within an hour; and

- c. Evaluate the turtle skin and shell daily for any abnormalities or worsening of the turtle's condition.
10. Facilities with preexisting "dump and fill" tanks for rehabilitating turtles must contact the Service or the appropriate State agency for additional husbandry conditions to reduce stress to the animals during water changes, as well as provide a projected timeline (not to exceed 1 year) for the retrofit of these tanks.
11. Any flow-through seawater system must be maintained to facilitate sufficient turnover of seawater. At a minimum, any flow-through system must have a filtration system on intake. For closed or semi-open systems, filtration must be incorporated into the system to ensure appropriate water quality of recirculated water. Filtration and flow through systems must be able to maintain the minimum water quality parameters.
12. The facility must have the ability to (1) monitor and operate within the parameters described in this document, (2) correct any situation in which the parameters are not met, and (3) properly care for the sea turtles while corrective measures are being taken.
13. Water disposal must be in accordance with all applicable local, State, and Federal laws.
14. Treatment or pre-filtration of fresh seawater is recommended to remove infectious cercariae (parasitic larva of a trematode worm).
15. Facilities that make sea water must ensure that the appropriate variety of salt (without anticaking agents) is used to make and maintain the water quality standards for marine life.

#### Water Quantity

1. Any facility housing sea turtles must have the ability to provide adequate water quantity under normal and emergency conditions to allow complete submergence and unimpeded turning. In an emergency, sea turtles may be kept out of water for a maximum of 4 hours per week. During this time, they must be kept moist and protected from sun, heat, temperature extremes, and physical damage. This situation should occur only very rarely, if ever. Treatment of seriously ill or injured sea turtles may require they be out of water for more than 4 hours per week (e.g., during anesthesia, when administering fluids, or to ensure they do not drown if too weak to surface to breathe).
2. If sea turtle tanks are regularly drained and cleaned, adequate holding tanks must be available to house the turtles safely during this time.

#### Food and Feeding

1. Without exception, the food fed to sea turtles must always be of human quality. Food must either be fresh, flash frozen and glazed, or frozen in some other manner that ensures the

quality of the food. Any frozen food must be completely thawed in cool air, preferably, or cool water, prior to feeding and used entirely or discarded. Under no circumstances may food be refrozen. If the quality of the food is questionable, it cannot be used as food for sea turtles. This does not prohibit commercially prepared diets (e.g., dry, pelletized, floating or sinking formations), but they should be fresh or stored frozen to maintain nutritional value and to prevent deterioration or microbial growth.

Reasonable efforts must be made by the holding facility to develop proper diets for sea turtles. Feeding of oily or fatty fish can lead to obesity and cause fatty degeneration of the liver in sea turtles and should be minimized. Also, the quantity of food should be rigidly controlled so turtles do not become obese. It is the responsibility of the holding facility to ensure and justify the adequacy of its feeding regimen for each species and size class. Turtles should be weighed and measured monthly (4-6 times a year for non-releaseable turtles) to ensure they are not overfed. See Whitaker and Krum (1999) for additional information on feeding recommendations.

2. Hand feeding of turtles that will eventually be released is prohibited except when absolutely necessary for rehabilitation. In the latter case, the turtle must be allowed to feed on its own as soon as possible. The use of bottom feeders or other tools mimicking the natural feeding environment is encouraged.
3. Food for groups should be broadcast around the tank to avoid competition and possible injury. Special precautions and vigilant oversight are required when using broadcast feeding for large numbers of turtles.
4. Prior to release, turtles of species that routinely feed on live prey in the wild should be provided with and observed capturing live food prior to release to ensure sufficient foraging capabilities. Live prey that is an immediate host for parasites such as snails should be avoided.

### Behavior and Intermixing

Some species of sea turtles, especially loggerheads and Kemp's ridleys, may be very aggressive toward their own and other species, particularly while feeding. Whenever the situation dictates that sea turtles be placed together, they must be closely observed until it is established that they display no aggressive behavior that might result in injury or death. Turtles should be separated at the first sign of aggression. Tank dividers can be used. Small sea turtles should not be housed with larger turtles, especially of another species, as larger animals can injure or kill smaller animals.

Note: Male and female adult turtles must be separated to prevent captive breeding.  
Intermixing of Wild and Captive Stock:

1. Existing captive sea turtles must not be exposed to seawater in which newly wild-caught or live-stranded sea turtles are kept without an adequate period of quarantine to prevent disease or parasite transmission. The quarantine period should be at least 60 days.
2. Rehabilitation facilities must provide separate tanks or a tank with a separation for long-term and temporary captive turtles, not only in the physical plant but in seawater maintenance and treatment systems. This will prevent injury due to aggressive behaviors, or sickness or death through transfer of pathogens or parasites.
3. If a female deposits eggs in an exhibit or shows signs of stress in an attempt to leave the exhibit, the facility must contact the Service or the State agency that issued the permit under which the turtle is being held within 24 hours to discuss the best course of action for the eggs and/or female.

#### Fibropapillomatosis:

Fibropapillomatosis (FP) is an infectious disease and the preponderance of scientific evidence supports that a herpesvirus is the causative agent. The high incidence of FP in green turtles in Florida waters is of special concern. Turtles with FP must be isolated from turtles that are not known to have the disease. FP growths are highly vascular when large and appear to be extremely sensitive due to the presence of nerve bundles, especially around the eyes. Facilities that admit turtles with FP must have the capacity for strict biosecurity, including disinfection of equipment, separate water handling systems, and education of staff and caregivers on biosecurity measures. Only experienced veterinary personnel should be treating these individuals.

#### Veterinary Care

Any facilities holding sea turtles in captivity must have access to a veterinarian who:

1. Has an active veterinary license in the United States (means a person who has graduated from a veterinary school accredited by the American Veterinary Medical Association Council on Education, or has a certificate issued by the American Veterinary Graduates Association's Education Commission for Foreign Veterinary Graduates).
2. Will be on-call 24-hours a day or identify at least one backup veterinarian or have a contingency plan for when the attending veterinarian is not available.
3. Has documented 1-year clinical experience working with sea turtles and clear demonstration of clinical proficiency or have a written consulting agreement with an experienced sea turtle veterinarian, which assures availability of consultation when needed.
4. Has access to a list of veterinarians with experience working with sea turtles to contact for assistance.

A properly permitted facility may receive for treatment or rehabilitation any sea turtle that is sick or injured. Upon receiving a sick or injured sea turtle, the attending veterinarian is to examine the turtle within 24 hours. If this is not possible, the Service or the State agency must be contacted to make alternative arrangements, which could include consulting an approved veterinarian at a remote location.

The diagnosis of disease, surgical intervention, and the prescription of medications must be carried out only by a qualified veterinarian. Measures must be taken to preserve the health of captive sea turtles and to prevent injury or spread of disease. Injured or diseased sea turtles must receive appropriate medical care under the supervision of a qualified veterinarian in a method that prevents cross-contamination to other animals. Injured or diseased animals should be physically separated with their own clean seawater source, and all reasonable efforts made to avoid cross-contamination to unaffected animals.

Health records must be kept for each animal. These should include all examination and clinical data, as well as an assessment of the findings. For guidance on veterinary care, see Leong *et al.* (1989), Campbell (1996), and Whitaker and Krum (1999).

#### Biological Samples for Diagnostics and Health Assessments

1. Samples must remain in the legal custody of the facility holding the Service and/or State permit or letter of authorization.
2. Only samples specifically taken for diagnostic tests may be sent to laboratories to assist in health assessments.
3. The transfer of biological samples from the facility to any location or individual other than those identified in the facility's permit or letter of authorization requires written approval from the Service and/or the State that issued the facility's permit or letter of authorization.
4. Sea turtles may be transported off-site for specific tests such as Magnetic Resonance Imaging (MRI) or Computed Tomography (CT) scans to assist diagnosis for health assessments provided it is a test prescribed by the qualified veterinarian treating the turtle, and the laboratory is listed in the facility's permit or letter of authorization.

#### Euthanasia

Euthanasia is authorized only if, in the judgment of a veterinarian, a turtle's recuperation is unlikely, if an illness or injury is terminal or untreatable, if an illness is communicable and likely to pose a threat to wild populations or captive turtles, or if a turtle's wounds would preclude survival in the wild or a self-maintaining life in captivity. All facilities conducting rehabilitation must obtain a Service and/or State permit for euthanasia or have access to a veterinarian that has a Service and/or State permit for euthanasia. Note: Euthanasia of endangered turtles may only be authorized by the Service.

## Release

The final determination of an individual's fitness for survival in the wild will be made with input from the facility's veterinarian, animal care personnel, and other persons with sea turtle expertise, as necessary. The attending veterinarian should perform a hands-on physical examination of the turtle prior to the release determination. The attending veterinarian should review the turtle's complete history including all stranding information, last treatment, and diagnostic test results. When a facility's veterinarian has determined that the turtle has recovered sufficiently from its illness or injury and is ready for release, the principal permit holder, or a designee, must contact the Service or the State agency that issued the permit under which the turtle is being held within 24 hours to discuss the appropriate time and site for the release. The site for release must be determined based on the latest scientific information on turtle movements and regional knowledge. ***Failure to notify the permitting agency of the releasable status of a turtle or the unnecessary retention of turtles in captivity following medical clearance will be considered a violation of the Service or State permit. Unless there are additional complications, turtles are expected to be released within 2 weeks of medical clearance.***

**Release of Cold-stunned Turtles:** The criteria for determining whether turtles that were cold stunned with no other medical conditions can be released should be based on behavior and activity of the turtle. If a turtle is alert, swimming strongly, not on medication(s), and otherwise behaving normally, it should be released as soon as possible in the vicinity of where it was found cold stunned. The ideal release water temperature is approximately 18°C (65°F) and above; however, circumstances may necessitate a release at a lower water temperature, but no lower than 10°C (50°F) (Schwartz 1976). If a turtle has been cleared for release, but the water temperatures in the capture location are still too low, the Service or the appropriate State agency must be contacted to coordinate the release timing and location. Prior to release, turtles should be held in water temperatures that are gradually adjusted to mimic those found in the natural environment so the turtle does not have a shock response upon entering a cooler or warmer natural water temperature.

**Release of FP Turtles:** Turtles with FP can be released when a facility's veterinarian has determined that the turtle has recovered sufficiently from its illness or injury and is ready for release. The principal permit holder, or a designee, must contact the Service or the State agency that issued the permit under which the turtle is being held within 24 hours to discuss the appropriate timing and site for the release. The site for release must be determined based on the latest scientific information on turtle movements and regional knowledge regarding prevalence of FP.

All sea turtles must be measured and weighed prior to release following the protocols listed at [http://accstr.ufl.edu/cmttp\\_tag\\_&\\_measure\\_protocols.html](http://accstr.ufl.edu/cmttp_tag_&_measure_protocols.html). The release protocol or procedure and the release location must be approved in advance by the Service or the appropriate State agency.

**External Flipper Tags and Passive Integrated Transponder (PIT) Tags:** Flipper and PIT tags must be inserted prior to release only under the following conditions:

1. The turtle is size appropriate for receiving a flipper and/or PIT tag.
2. Tagging does not delay the release of the turtle.
3. The turtle is tagged by animal care staff that has demonstrated tagging expertise and is specifically permitted by the Service or the appropriate State agency to conduct this activity.
4. The turtle is tagged following the protocols listed at [http://accstr.ufl.edu/cmttp\\_tag\\_&\\_measure\\_protocols.html](http://accstr.ufl.edu/cmttp_tag_&_measure_protocols.html).

Satellite Transmitters: An investigator or facility wanting to attach a satellite transmitter to a sea turtle due for release must first obtain a modification to their Service and/or State permit. Each request must be reviewed on a case-by-case basis by the Service and/or the appropriate State agency.

The release of a turtle must not be delayed to obtain permits or to facilitate the attachment of a satellite transmitter. Failure to obtain a Service and/or State permit modification is considered a violation of the original Service and/or State permit.

The following information should be included with satellite transmitter permit application submissions:

1. A letter from the veterinarian caring for the turtle stating that the attachment of the satellite transmitter will not compromise the health of the turtle and its' survival in the wild.
2. A proposal that identifies the benefit to the conservation of the species in the wild including specific Recovery Actions identified in the species' Recovery Plan.
3. A compilation of information for all satellite tagged rehabilitated turtles already released by the facility within the State waters for the species proposed to be tagged. Include the identification of the turtle(s), date(s) released, information obtained from the previous tagging event(s), and information needs/gaps expected to be gained from the proposed tagging.
4. The species, size, and weight of the turtle that is being proposed for satellite tagging.
5. The size and weight of the transmitter proposed for the turtle.
6. The method of attachment.
7. Information about the individual who will be performing the attachment, including their contact information and a history of their sea turtle transmitter attachment experience.

## Necropsy and Disposal of Carcasses

1. Necropsies must be performed on any turtles that die at a captive facility. Necropsies must be performed by or in consultation with a veterinarian, veterinary diagnostic clinic, qualified pathologist of a college or university, or qualified State/Federal resources agency staff. For guidance on conducting necropsies, see Wolke and George (1981), Rainey (1994), and Wyneken (2001).
2. The following documents must be sent to the Service and/or the State agency that issued the permit(s):
  - a. The Sea Turtle Stranding and Salvage Network - Gross Necropsy report (<http://www.seaturtle.org/groups/ncwrc/STSSN.necropsy.pdf>), and
  - b. A copy of any necropsy report that includes the results of pathological, histological, microbiological, virological, and parasitological studies.

Following necropsy, the carcass of any sea turtle that dies while in the custody of a Service or State permitted/authorized facility must be completely destroyed (in accordance with State and local laws) or, subject to the approval of the Service or the State agency, be offered to a museum, university, or other educational or research facility. Under NO circumstances may a dead sea turtle, or any part thereof, be salvaged for any purpose other than Service or State-approved education and/or research activities.

## Conclusion

### Inspection:

In order to ensure that facilities holding live sea turtles for rehabilitation, education, and/or research are maintaining the requirements for care and maintenance, and are in compliance with all applicable laws, rules, and guidelines, all facilities are subject to inspection at any time by Service or State personnel. Facilities may be asked to provide a current coliform bacteria count and water quality data upon inspection. Facilities will be provided with a copy of the report generated from the inspection. If the facility does not meet the requirements of their permit, which include the above *Care and Maintenance Requirements*, it will be considered a violation of the Service and/or State permit or letter of authorization.

### Reporting:

For Service permits (or if required by a State's permit or letter of authorization), quarterly reports (Quarterly Report: Appendix A) of the number and species of sea turtles taken to a permitted rehabilitation facility for treatment, and their diagnosis must be emailed to the Service at [seaturtle@fws.gov](mailto:seaturtle@fws.gov) and/or the State contact identified in the State permit or letter of authorization. Information must be emailed on the following dates (April 15, July 15, and October 15) each year.



In addition, an annual report must be submitted no later than January 15 of each year and should include the following:

- i. A January through December summary of the number and species of sea turtles taken to the permitted rehabilitation facility for treatment, their diagnosis and current disposition (including those that died, were transferred, or were released).
- ii. An account of euthanized specimens along with a description of the circumstances of their capture and reasons for euthanasia.
- iii. Evaluations of all non-releasable (resident) turtles (Non-Releasable Turtle Report: Appendix B) and current information regarding the care of the turtle(s) including the size and weight.
- iv. A list of veterinarians and animal care staff that worked under the Service permit along with a summary of their sea turtle experience.
- v. A summary of the number and species of sea turtles in the facility that was collected prior to listing under the Endangered Species Act. Include information confirming that these turtles are kept in a separate tank from non pre-Act turtles and that adult male and female turtles are maintained separately.

For Service permits, annual reports must be submitted to the office of the Service's National Sea Turtle Coordinator, 7915 Baymeadows Way, Suite 200, Jacksonville, Florida 32256-7517

These guidelines provide minimum requirements for care and maintenance of captive sea turtles. They will be revised periodically as additional information becomes available about the needs of sea turtles in captivity. Comments and suggestions regarding these requirements are welcomed and should be directed to the Service's National Sea Turtle Coordinator, 7915 Baymeadows Way, Suite 200, Jacksonville, Florida 32256-7517, fax 904-731-3045, email [seaturtle@fws.gov](mailto:seaturtle@fws.gov).

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